

Ohio Agricultural Experiment Station.

BULLETIN 55.

WOOSTER, OHIO, OCTOBER, 1894.

THE RUSSIAN THISTLE IN OHIO

AND

WEEDS IN GENERAL.

OHIO LAWS

RELATIVE TO WEEDS, BLACK-KNOT AND YELLOWS

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NORWALK, OHIO:
THE LANING PRINTING CO., STATE PRINTERS
1894

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The Bulletins of this Station are issued at irregular intervals. They are paged consecutively, and an index is included with the Annual Report, which constitutes the final number of each yearly volume.

BULLETIN

OF THE

Ohio Agricultural Experiment Station.

NUMBER 55.

OCTOBER, 1894.

THE RUSSIAN THISTLE IN OHIO.

BY AUGUSTINE D. SELBY, B. SC., BOTANIST.

A new and pernicious weed has just entered the State from the westward. In view of what this weed has done elsewhere and gives promise of doing in Ohio, for citizens of the State and all owners and occupiers of land to fail in applying prompt and effective remedies, would be shortsighted and unwise. To the end that the pest may be recognized and every available measure applied for its eradication wherever it appears, this bulletin is devoted almost exclusively to it. The Russian thistle is known at present to exist in but one county, and only to a limited extent in that, but from the manner of its introduction, promptness in dealing with it seems very desirable.

The descriptive and general matter of this bulletin lays no claim to originality, other publications having provided the original sources of information concerning the plant. Special mention should be made, at the outset, of the bulletins on the Russian thistle, by Lyster H. Dewey, of the U. S. Department of Agriculture, Washington.

NAME OF THE PLANT.

This plant is called Russian thistle, Russian tumbleweed and Russian cactus. It is really neither a thistle nor a cactus, but is properly a tumbleweed and related to other plants known by that name. The name Stalwort was usually applied to the plant before its spread in the west. The name Russian thistle seems most generally used and is therefore employed here. To botanists the plant is known as *Salsola kali tragus* (L.) Moq., of the natural order Chenopodiaceæ. The common goosefoot or lamb's quarters belongs to the same order, and the tumbleweed, *Amarantus albus*, to a closely allied order.

DESCRIPTIONS.

The Russian thistle is an annual plant, coming from seed every year, 1 to 3 feet in height, branching profusely from the base, forming a

low spreading growth varying in density as shown in Plates I and II, and from a few inches to 6 feet in diameter. The color of the whole is light green; the stem, branches and upper leaves are striped with longitudinal red lines. The root is distinctly a white tap root with few branches and easily pulled from the ground. The leaves are alternate on the stem; those of the young plant are single, 1 to $1\frac{1}{2}$ inches long, very narrow, (about $\frac{1}{8}$ inch) rather thick, soft and yielding, but with a spine-point, dropping off more or less (see Plate III, Fig. *b*). The leaves of the mature plant, especially on the upper branches, are in threes, two bracts diverging from above the base of each leaf, short, $\frac{3}{8}$ to $\frac{1}{2}$ inch long, rigid, fleshy, with broad thick base, tapering rapidly to a spiny point, making a cluster of stiff spines (see Plate III, Fig. *a*). Flowers from July to October, solitary and without stalk, one above the base of each cluster of spines, about $\frac{3}{8}$ inch in diameter, bright rose color to pale white, thin and papery, with five divisions to the calyx, stamens 5 and styles 2 (see Figs. *c* and *d*, Plate III); seed attached to the base of each flower, $\frac{1}{16}$ inch in diameter, at the top, much broader than at the bottom, of coiled appearance (Fig. *e*). Embryo green in color and spirally coiled (Fig. *f*). Seeds mature from late in August to October and possibly November. With winter, the plants break off at the surface of the ground, and are rolled by the wind, scattering the seed.

The following technical description is taken from bulletin 15, Division of Botany, U. S. Department of Agriculture, by L. H. Dewey:

"*Salsola kali tragus* (L.) Moq. in DC. Prod., XIII, 2, 187 (1849). A herbaceous annual, diffusely branching from the base, $1\frac{1}{2}$ to 3 feet (0.5 to 1 m.) high and twice as broad, smooth or slightly puberulent; tap root dull white, slightly twisted near the crown; leaves alternate, sessile; those of the young plant deciduous, succulent, linear or subterete 1 to 2 inches (3 to 6 cm.) long, spine-pointed, with narrow, denticulate, membranaceous margins near the base; leaves of the mature plant persistent, each subtending two leaf-like bracts and a flower at intervals of $\frac{1}{2}$ to $\frac{5}{8}$ of an inch (2 to 10 mm.), rigid, narrowly ovate, often denticulate near the base, spine-pointed, usually striped with red like the branches, $\frac{3}{8}$ to $\frac{5}{8}$ of an inch (6 to 10 mm.) long; bracts divergent, like the leaves of the mature plant in size and form; flowers solitary and sessile, perfect, apetalous about $\frac{5}{8}$ of an inch (10 mm.) in diameter; calyx membranaceous, persistent, inclosing the depressed fruit, usually rose colored, gamosepalous, cleft nearly to the base into five unequal divisions about $\frac{1}{8}$ of an inch (4 mm.) long, the upper one broadest, bearing on each margin near the base a minute tuft of very slender coiled hairs, the two nearest the subtending leaf next in size, and the lateral ones narrow, each with a beak-like connivent apex, and bearing midway on the back a membranaceous, striate, erose-margined horizontal wing $\frac{1}{2}$ of an inch (2 mm.) long, the upper and two lower wings much broader than the lateral ones; stamens 5 about equaling the calyx lobes; pistil simple; styles 2 slender about $\frac{1}{2}$ of an inch (1 mm.) long; seed 1 obconical, depressed, $\frac{1}{16}$ of an inch (nearly 2 mm.) in diameter, dull gray or green, exalbuminous, the thin seed-coat closely covering the spirally coiled embryo; embryo green, slender, about $\frac{1}{2}$ inch (12 mm.) long when uncoiled, with two linear cotyledons. The plant flowers in July or August, and the seeds mature in September and October. At maturity, the action of the wind causes the root to break with a somewhat spiral fracture at the surface of the frozen ground, and the plant is blown

about as a tumbleweed. The mature flower with the inclosed seed is held in place by the minute tufts of coiled hairs, preventing the seeds from falling all at once when the plant begins to roll."

CONCERNING SEEDS AND RESEMBLANCES.

A plant like that shown in Plate I, frontispiece, will produce from 100,000 to 200,000 or more seeds, enough to seed a large tract effectually. A small plant relatively, will ripen many thousand seeds.

Too much importance can scarcely be attached therefore, to the matter of recognizing seeds of the Russian thistle. Flax seed and millet seed, possibly clover seed also, may contain the seeds of this weed as an impurity, particularly if obtained from infested regions. Scan your seeds closely for several years to come!

A word about resemblances will be of possible help. A large number of specimens of tumbleweed, *Amarantus albus*, L. have been sent to the Station for the Russian thistle. Many of the specimens had the same habit of growth as the true Russian thistle, but are distinguished by the absence of spine-points on all leaves and by the presence of broad flat leaves. The seeds of the tumbleweed are round and shining with one diameter much shorter than the other.

ORIGIN, HISTORY AND INTRODUCTION.

The Saltwort has been known on the shores of Europe, Asia and America for more than a century, that is the *Salsola kali* L. "The variety *tragus* Moq.," states Mr. Dewey, "seems to have developed on the plains of southeastern Russia where the conditions are very similar to those of the great plains region of the United States." "For many years it has been a destructive weed in the barley, wheat and flax regions of southeastern Russia, and the cultivation of crops has been abandoned over large areas of some of the provinces near the Caspian Sea."

It appears that the plant was first introduced into the United States in 1873 or 1874, in flax seed brought from Russia and sown near Scotland, Bonhomme county, S. Dakota. Thence it has spread until at present it involves large parts of North Dakota, South Dakota and Nebraska, with frequent occurrence in Minnesota, Wisconsin, Iowa, Kansas and Colorado. During the summer of 1894 it has been reported from Canada, Idaho, Illinois, Michigan, Indiana and Ohio, with other localities no doubt not known to the writer. The spread of this weed has been so rapid that it may be expected to invade Ohio with great strides; not sweeping every point, but finding a foothold here and there as the seed may be brought in. The only locality from which the true Russian thistle has as yet been reported in Ohio is in the vicinity of Bryan, Williams county; specimens were sent in from that point August 30, by Geo. W. Myers. Personal examination afterwards made, disclosed its presence for about eight miles along the L. S. & M. S. Railway. The plant photographed for

Plate III grew about six miles east of Bryan, and was pulled up two or three days before it was photographed. The yard stick in the foreground shows the spread of this plant, nearly five feet. Clearly the plants were introduced near Bryan by the railroad, probably by litter from stock cars loaded in the northwest and west. Seeds could easily be jarred out by the moving train or kicked out by the stock. Old plants found by Mr. Myers show that seeds were matured near the infested point last year (1893).

THE LIMITED AREA COVERED NO INDEX OF THE IMPORTANCE OF ACTION.

That an ordinary weed had been found in a single county of the State may seem of small importance, yet not so with the Russian thistle. As is shown from foregoing statements, sufficiently corroborated, the plant may now be ready at many other points to scatter seed. Every railroad traversing the State and handling cars loaded with stock in the infested regions is a possible source for introducing this weed. In a greater measure are the east and west trunk lines liable to bring the pest. It is hoped that timely warning and directions may prevent the weed from gaining such a foothold as in states farther west. The occurrence at all in Ohio should enable us to know the reality of the danger

MANNER OF DISSEMINATION.

In the fenceless prairies the Russian thistle rolls as a tumbleweed and thus travels over considerable distances, depositing the seeds. (Note office of hairs in holding seeds, see page 58.) For Ohio this method of scattering the seed promises to play a subsidiary though by no means an unimportant part. We note that the weed will be introduced almost entirely in two ways:

First—By the railways and along their lines.

Second—In impure seeds and forage, such as hay from the regions where it is found.

The spreading from a given point where it may secure a start, will be aided through the rolling habit; but if the beginning be along a railway the work of the wind can scarcely carry the seeds off the right of way of the railroad. On the other hand, a few plants in a large inclosure may sow enough seeds to give great trouble; in like manner this scattering will occur along railroads between the fences at cattle guards, etc.

The railroads may properly be appealed to, to destroy the thistles along their lines. The farmers are to be warned against using any seeds or forage containing seeds of the Russian thistle.

WHAT PROMISES TO BE THE CHARACTER OF THE RUSSIAN THISTLE IN OHIO?

There is little room for consolation so far as may be inferred from present conditions. For the United States, the spread of the Russian

thistle through what we may call involuntary agencies has equaled, if it has not surpassed, the spread of any plant disseminated voluntarily. In character the plant is one of the worst weeds. It intrudes where not wanted, and the damage in the wheat growing regions of the Dakotas has been very great. There are plenty of neglected places in Ohio, and some not so classed, that will produce many fold of these pests. It may be found, if once well spread, which let us hope may not happen, that these plants will grow as do the *Amarantus*, *Chenopodium*, and smartweed in corn and potato fields that have been laid by. In these places it would be troublesome as well as in the wheat to follow. Neither may we take the view that it is likely to die out of its own accord. This appears to be wholly untenable.

Taken altogether, the only feasible plan appears to be that of a war of extermination. This extermination is possible now.

PUBLICATIONS CONCERNING THE RUSSIAN THISTLE.

The following publications concerning the Russian thistle are mentioned since some of them may be available in certain cases:

Farmer's Bulletin No. 10, U. S. Department of Agriculture, by L. H. Dewey (issued January, 1893). Bulletin Wisconsin Experiment Station No. 37, by E. S. Goff (October, 1893); Nebraska Agricultural Experiment Station, Bulletin No. 31, by Chas. E. Bessey (December, 1893); Bulletin No 15, Division of Botany, U. S. Department of Agriculture, by L. H. Dewey (May, 1894).

An illustrated poster supplement is issued with this bulletin and is especially designed for use by section foremen and in post offices and public places. Almost every important agricultural paper has published one or more references to the Russian thistle, and in many cases illustrations also.

REMEDIES AND SUGGESTIONS.

I. These are all summed up together in the following statements:

1. No Russian thistles are to be allowed to go to seed.
2. All that escape destruction before ripening seeds are to be destroyed by fire.
3. See that all seeds and forage used are free from seeds of Russian thistle; flaxseed and millet seed should receive special examination.

II. How may the results aimed at in I, be attained?

It is to be noted that the plant is an annual and that the seeds have a probable low vitality. The labor of eradication is thereby reduced; it must rely for its efficiency on the destruction of the seeds. Young plants may be pulled up or larger ones before August 20. This will suffice; cutting is not final as the plants sprout up again. After the date above given, all plants should be first pulled up and after drying, thoroughly

burned. Unless a brush pile or log heap is at hand, the green plants will be found too succulent to burn well.

III. The modification of our weed laws may prove of service. However, there is danger in relying on the laws to eradicate weeds. The laws are valueless unless every one does his whole duty and sees to it that his neighbor, his road supervisor, and his railways do the same. Roadsides should not be allowed to harbor weeds of any kind. The law is very explicit as to who shall destroy them.

IV. This bulletin is issued in the belief that it will prove of use during several seasons. The Russian thistle is likely to come into certain localities, then into others, and still others. Preserve this bulletin for future use.

DESCRIPTION OF PLATES.

Plate I. Frontispiece, shows the compact form of Russian thistle, Ohio specimen, much reduced in size. The engraving is from a photograph by Beach, of Bryan, Ohio,. The measure in the foreground is a yard-stick. The plant grew about six miles east of Bryan, along the L. S. & M. S. railway.

Plate II. Shows the ordinary form of Russian thistle, more open than the preceding. We are indebted to the U. S. Department of Agriculture for the cut.

Plate III. This cut also was obtained through the courtesy of the Department of Agriculture, Washington. It shows at Fig. *a* branch of mature plant, natural size; *b*, seedling about two weeks after germination, natural size; *c*, flower detached from the axil and remaining suspended by minute hairs in the ordinary inverted position on a rolling plant, enlarged three diameters; *d*, flower viewed from above and in front, showing the calyx, lobes, etc., enlarged three diameters; *e*, seed with flower parts removed from the seed, enlarged five diameters; *f*, embryo removed from the seed, enlarged seven diameters.

WEEDS IN GENERAL.

WHAT IS A WEED AND HOW DO WEEDS DIFFER?

A weed is a plant out of place; one that tends to invade places where it is not wanted. The difference between the Russian thistle and other weeds is one of degree rather than of kind. Canada thistle and horse nettle, where these are well started, would be rather more difficult, perhaps, than the Russian thistle to eradicate. This is due to the greater ease with which an annual weed is destroyed than is a perennial one whose roots or underground parts survive from year to year. In the case of one coming from seed every year i. e., an annual, the prevention of a crop of seed limits the spread of the plant; in such cases one must not overlook the presence of a supply of seeds in the soil capable of germination later, provided the plants have been permitted to ripen seeds in the past. Take an illustration from the lamb's quarters and pigweeds that grow in the early potato field or garden, or even in corn; one year's clean culture will not free the soil from the weeds. The period during which clean culture must be practiced will depend upon the vitality of the seeds in the presence of moisture. The Russian thistle is a plant whose seed vitality is thought to be rather low; the ragweed enjoys a reputation quite the contrary.

In the class of perennials we note important differences dependent upon another feature, namely: The presence or absence of creeping rootstocks. The mints, Canada thistle, horse nettle and some others, have these creeping underground stems, by which the plant encroaches more and more each season upon the surrounding area, involving an ever widening circle. Not only these spread by underground parts, but there is the spread by seed in addition. The worst is really only understood when we undertake to dig up and exterminate a weed like Canada thistle or mint; if a piece of the rootstock remains, then a new plant appears; the breaking or cutting of the rootstock may indeed only increase the pest. In case of many perennial plants a single digging ends the nuisance.

The class of biennial weeds includes those growing from seed one season but not blossoming nor producing seeds until the following summer. The common thistle, winter cress and in part the prickly lettuce belong here.

ONE CLASSIFICATION OF WEEDS.

We may classify our weeds then in the following manner:

I. Annuals, i. e., growing from seed every year and dying after ripening seed: Russian thistle, pigweed, lamb's-quarters, ragweed,

smartweed, foxtail, crabgrass and frequently prickly lettuce.

II. Biennials, i. e., growing from seed but not producing seed until the second season: Wild parsnip, wild carrot, common thistle, winter cress, the mulleins, burdock and often the prickly lettuce.

III. Perennials, i. e., plants surviving year after year by underground parts, also propagated from seeds. Of these we have two classes:

A. Such as have underground, creeping rootstocks—Horse nettle, Canada thistle and mint.

B. Those without horizontal rootstocks—Oxeye daisy, asters, golden-rods, agrimony, narrow leaved plaitain, broad leaved plaitain.

A study of the root systems of our worst weeds will give valuable data. The classes "annual," "biennial" and "perennial" are arbitrary, and plants under all conditions do not conform to any one class. Prickly lettuce may be both annual and biennial, and narrow leaved plaitain may be either biennial or perennial.

Use such a table and classify the weeds on your farm; you will be surprised at the questions it presents to you. Not the least important one is this, "How shall each weed be exterminated?"

Obviously the measures taken must be in accordance with the facts of the plant's life history. Always wage a winning warfare if possible, and a warfare against weeds is bound to be a winning and profitable one in the end, if undertaken with this knowledge.

ANOTHER WAY OF CLASSIFYING WEEDS.

This is according to the means of their dissemination. Some have such a ready means of scattering the seed that the entire country is soon overrun. The prickly lettuce (*Lactuca scariola*) is a good illustration. Appearing in Ohio in 1878 and 1879, it has now scattered over the whole State, by reason of the buoyancy of the seed and its tuft of attached hair (pappus). The thistles are disseminated in the same way. Many plants are started from seeds dropped off cars or wagons; still others are distributed in seeds. The stick-tights, beggar's lice and hound's tongue attach themselves to animals. Very few weeds are scattered by having edible berries.

Still another way is to put the weeds of farm and garden into classes such as "worst weeds," "bad weeds," "indifferent weeds." Which are the ten worst weeds in your locality?

WEEDS COMMONLY FOUND IN GRASS AND OTHER SEEDS.

Some very bad weeds are introduced and disseminated in this manner. Canada thistle, the Russian thistle, horse nettle, smartweeds, the plaitains, wild carrot, the weedy grasses, such as crab grass, panic grass and others. Millet seed and clover seed are especially prone to contain

impurities of the sorts named. Some specimens examined in the past had a half dozen or more different kinds of weed seeds in a small sample. Be careful to sow no impure seeds!

WEEDS ALONG HIGHWAYS AND RAILROADS.

These are a constant source of irritation and of danger. The weeds should be cut by the proper authorities. It should be carefully observed whether this is done upon the right of way along railroads and highways. In the case of highways it is made a certain officer's duty by statute and the interests of all demand the performance of this duty.

Finally, it may be stated that the botanist of this Station purposes to prepare a more or less extended account of the weeds of the State, with illustrations so far as practicable. This must be left till another season at earliest; meanwhile correspondence and specimens with information will receive careful attention.

OHIO WEED LAW.

The following is the Ohio statute pertaining to the destruction of weeds, as amended and passed April 25, 1893. (Ohio Laws vol. 90, p. 301.)

SECTION 4730. The superintendent of any improved or macadamized road, supervisor of county and township roads, or street commissioner of any city or village, shall, between the 15th and 30th days of June, and between the 1st and 15th days of August, and between the 15th and 30th days of September of each year, cut all brush, briars, Canada or common thistles, or other noxious weeds growing within the limits of any county or township road, improved or macadamized road, street or alley, within their jurisdiction. Such superintendent or supervisor shall be allowed \$1. 50 per day for all necessary labor, to be allowed by the trustees and paid by the treasurer of such township out of the road fund then in his hands. The superintendent or supervisor of any such roads may allow any landowner or tenant to cut and destroy any such brush, briars or weeds, growing on such highways, [along] the lands abutting on such highways owned or occupied by such landowner or tenant, and before such work is performed allow and fix a reasonable compensation therefor, which amount shall be credited on the road tax of that year assessed against said premises. The superintendent or manager of any toll road shall cut and destroy all brush, briars and noxious weeds growing within the limits of any such road, between the days of each month as above specified in this section, and in default thereof and for five days thereafter the trustees of any township through which any such road passes shall cause any such brush, briars and weeds to be cut and destroyed, and shall have right of action against any such toll road company, for the amount of such work, together with one hundred per cent. penalty, and cost of action to be recovered before any justice of the peace of such county.

SECTION 4732. The trustees of any township of this state, upon information in writing, that Canada or common thistles, oxeye daisy, wild parsnip, sweet clover, wild carrots, teasels, burdock or cockle burs, are growing on any lands in their township and are about to spread or mature seed, between the first day of June and the fifteenth day of October of each year, said trustees shall cause notice in writing to be served upon the owner, lessee, agent or tenant having charge of any such lands, notifying such owner, lessee or agent or tenant that Canada or common thistles or other noxious weeds mentioned in this section are growing on such lands, and that such Canada thistles or other noxious weeds shall be cut and destroyed within five days after the service of such notice; and in default thereof, that said township trustees will enter upon such lands and cut and destroy such Canada or common thistles or other noxious weeds; and that the cost of cutting such Canada or common thistles or other noxious weeds, with the cost of such notice, will become a lien against said lands. Any constable or deputy marshal of any city or village, or deputy, is hereby authorized to make service and return of any such notice, and the fees for such services and return shall be the same as are allowed for service and return of summons in civil cases before magistrates. If any owner, lessee, agent or tenant having charge of any such lands shall fail to comply with such notice, the township trustees shall cause said Canada or common thistles or other noxious weeds to be cut and destroyed, and may employ any person to perform such labor, and allow such person fifteen cents per hour for the time occupied in performing such labor, and pay the sum for such labor out of any money in the treasury of said township not otherwise appropriated, and take receipt for the same. Said township trustees shall make return in writing to the board of commissioners of their county, with a statement of the

charges for their services, the amount paid to the person for performing such labor together with the fees of the officers who made the service of notice and return, with a proper description of the premises; and the same having been allowed, shall be entered upon the tax duplicate, and shall be a lien against said lands, from and after the date of such entry on the duplicate, and shall be collected as other taxes, and returned to the township with the general fund.

SECTION 4732a. That in all cities and incorporated villages, except cities of the first and second grade of the first class and first and second grade of the second class, the mayor shall, during the month of May of each year, cause notice to be published for two consecutive weeks in one or more newspapers published in the corporation, or by posting up written or printed notices in said city or village at three public places for ten days next previous to the first day of June of each year, warning the owners, lessees or agents of lots and lands within such city or village to cause all Canada or common thistles, or other noxious weeds mentioned in section forty-seven hundred and thirty-two, growing on any such lots or lands within said corporation, to be cut and destroyed so that they do not mature seed or spread to adjoining lands. The common council of such city or village shall, upon information in writing that Canada or common thistles or other noxious weeds mentioned in section forty-seven hundred and thirty-two are growing on any such lands, within their corporation, between the tenth day of June and the fifteenth day of October of each year, [shall] cause such Canada or common thistle or other noxious weeds to be cut and destroyed so that they do not mature seed or spread to other lands, and said council may employ any person to cut and destroy said noxious weeds and allow such person so employed fifteen cents per hour for the time employed in such labor. And said council shall pay said amount out of the money of the general fund in the treasury of said city or village not otherwise appropriated, and take a receipt therefor. And said council shall make return in writing to the board of commissioners of their county, with a statement of the amount paid for such labor, and one dollar additional, as a penalty on each lot or parcel of land containing less than one acre, and with two dollars on each lot or parcel containing more than one acre. The same having been allowed, the auditor shall enter the amount so certified to him on the tax duplicate of the county against the lots or lands on which said Canada or common thistles or other noxious weeds were cut and destroyed, and the amounts shall be a lien against said lots or lands from and after such entry, and shall be collected as other taxes are collected, and returned to such city or village with the general fund; provided, that [if] any such owner of such lots or lands shall tender to the treasurer of such township in cases of townships, or to the treasurer of such city or village in the case of city or village, the amounts so chargeable against such lots or lands for such labor, together with the penalty as certified to by the clerk of said township, city or village showing the amount of such charges and penalty, the treasurer shall receive the amount so tendered, upon which said lots and lands shall be discharged from further liability.

SECTION 4732b. Township trustees shall be entitled to \$1.50 per day for their services under this act; the mayor of any city or village, or trustees of any township, or superintendent or other officer of any toll road, or superintendent of any improved or macadamized road, or supervisor of any county or township road, or street commissioner of any city or village, who neglects or refuses to perform their duties as mentioned in sections 4730, 4732 and 4732a, shall be fined in the sum of fifty dollars in any court having competent jurisdiction of such cases; such fines shall go into the road fund of the township in cases against township or toll road officers; and into the street fund in cases against mayors or other municipal officers.

SECTION 3. This act shall take effect and be in force on and after the first day of May, 1893.

The law pertaining to the destruction of weeds etc., along partition fences, passed April 29, 1885, is as follows: (Revised Statutes of Ohio (Giauque) vol. 1, pp. 1081-2):

To compel owners of land to keep brush, briars, thistles and other noxious weeds cut on their respective sides of line or partition fences.

SECTION 1. [4255-1.] *Be it enacted by the General Assembly of the State of Ohio*, That it shall be the duty of owners of land adjacent to any line or partition fence, when the enclosure of two or more persons is divided by such fence, and when the land is improved on both sides of the same, to keep all brush, briars, thistles or other noxious weeds cut in the fence corners, or along the line of partition fences; provided, however, that nothing in this section shall be construed to affect the planting of vines or trees for use.

SEC. 2. [4255-2.] If the owner or tenant occupying the same, neglects or refuses to cut, or have cut, such brush, briars, thistles, or other noxious weeds, as provided in the foregoing section, then any owner or occupant of land abutting on such line or partition fence, who may feel aggrieved thereby, may, after having given the owner or tenant occupying such land notice of his intentions, of not less than thirty days, (and if such brush, briars, thistles, or other noxious weeds are not cut or removed at the expiration of thirty days), notify the trustees of the township in which such land is situated, whose duty it shall be at once to repair upon the premises, when, if they become satisfied there is just cause of complaint, they shall proceed to cause such brush, briars, thistles, or other noxious weeds, to be cut in such manner as they may consider best, either by letting the work to the lowest bidder, or by entering into a private contract to have the same performed.

SEC. 3. [4255-3.] As soon as the work shall be completed to the satisfaction of the trustees, they shall certify to the auditor of the county the amount of the cost of such labor, together with the expense thereto attached with the correct description of the land upon which said labor has been performed, and the auditor shall place the same upon the duplicate, to be collected the same as other taxes are collected, and the county treasurer shall pay the amount when collected to the township treasurer as other funds, specifying the same.

SEC. 4. [4255-4.] The township trustees may anticipate the collection and refunding the cost of said labor to the township treasurer, and at the time said labor is performed draw their order upon such treasurer for amount, payable out of any township funds that may be in his hands.

SEC. 5. [4255-5.] The township trustees shall be entitled to one dollar per day for their services under this act.

The penalty for vending impure seed, amended February 14, 1884, is as follows: (Ohio Laws, vol. 81, p. 17, Giauque, vol. 11, p. 1725.)

SEC. 7001. Whoever knowingly vends any grass or other seed, in or among which there is any seed of the Canada thistle, white or yellow daisy, or wild carrot, and whoever being the owner, occupier or possessor of any land, suffers any Canada thistle, teasels or wild carrot to grow and ripen seed thereon, or on the highway adjoining the same, shall be fined twenty dollars.

Section 1 of the Wisconsin weed law says:

Every person and corporation shall destroy upon all lands which he or they shall occupy or control, all weeds known as Canada thistles, burdock, teasel, white-daisy and snap dragon, at such time and in such manner as shall effectually prevent them bearing seed. * * * *

A commissioner of Canada thistles is appointed and provision made for written notice, fine, etc.

Section 1 of the South Dakota weed law is as follows:

Every person and every corporation shall destroy on all lands which he or it may own or occupy, all weeds of the kind known as Russian thistle, Canada thistle and cockle-burr at such time as the township board of supervisors, or the board of county commissioners, in counties which have not been organized into townships, may direct; and notice shall be published in one or more county papers for a time not less than three weeks before the time fixed upon for the destruction of said noxious weeds.

Overseers of highways are requested to destroy weeds in the same manner and upon vacant land or where the proper person fails to destroy them.

Reading these quotations from the Wisconsin and South Dakota laws in connection with section 4732 of Ohio statutes will suggest to many the question of the application of this section (4732) to the railways. The same question may arise in respect to the application of section 7001. I am not aware that this point has ever been passed upon by the courts. The statutes are very precise in making it the duty of road authorities to destroy noxious weeds along highways; at present the railroads are more careful to have weeds destroyed than are the authorities of highways.

The insertion of the names Russian thistle and horse nettle in sections 4730, 4732 and 7001 of Ohio laws, might cover a desired omission should the Russian thistle become at all general. The horse nettle is very abundant in many places in southeastern Ohio at present.

The recently enacted Ohio law concerning black-knot and peach-yellows is here appended as dealing with a kindred subject:

BLACK-KNOT—YELLOW S LAW.

AN ACT

To prevent the spread of the yellows, a contagious disease among peach, almond, apricot and nectarine trees, and to prevent the spread of the black-knot, a contagious disease among cherry, prune and plum trees, and to provide measures for the eradication of the same, and to repeal an act entitled "An act to amend section 1 of an act entitled 'An act to eradicate the disease known as black-knot on plum and cherry trees,'" passed April 13, 1893. (Ohio Laws, vol. 91, p. 108-13.)

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That* it shall be unlawful for any person to keep, or to suffer or permit to be kept, or to remain upon his premises, or upon the premises under his charge or control, as owner or lessee, or otherwise, any peach, almond, apricot or nectarine tree infected with the contagious disease known as the yellows, or to keep any cherry, prune or plum tree infected with the contagious disease known as the black-knot, or any of the fruit from any of the said trees so infected, except from trees affected with black-knot, or to sell or to offer for sale, or to ship or permit to be shipped to any person in any manner, any of such fruit so infected, or from any trees so infected, except as aforesaid; that both trees and fruit so infected, except as aforesaid, shall be subject to destruction as public nuisances as hereinafter provided, and it shall be the duty of every person owning any fruit, or having in their charge or under their control any fruit from any of said trees so infected, or any of such fruit so infected, except as aforesaid, and of every person owning any of said fruit trees so infected, and of every person having any of said fruit trees so infected in their charge or under their control as agent, lessee or otherwise, to immediately destroy all such trees so infected and all of said fruit so infected, and all of said fruit from any tree or trees so infected, by burning the same; and whoever owning any of said fruit trees so infected, or any fruit so infected, or whoever having any of the same in charge as agent, servant or employe or lessee or otherwise, shall fail or neglect to destroy all of the same so infected within ten days after notice or knowledge of such infected condition, or shall fail or neglect to destroy all of the same within ten days after notice given to him by the township board of fruit commissioners, hereinafter mentioned, of such infected condition, shall be guilty of a misdemeanor and upon conviction shall be fined in any sum not exceeding one hundred dollars; provided, however, that in case of the black-knot in any such fruit tree it shall be sufficient to cut away and destroy only the limb or part of the tree affected with the black-knot, and destruction or the term destroy in this act shall be construed to mean destruction by fire.

SEC. 2. In any township in this state, on the application of not less than ten freeholders of said township, the township trustees of any such township may elect, others than those making the application as aforesaid, three competent freeholders of said township who are engaged in the business of growing any of such fruit, if such there be in the township; if there should not be three such persons within said township, then three persons, freeholders of said township, having experience or acquired knowledge in growing such fruit, as commissioners, who shall be known as the township board of fruit commissioners, each of whom shall hold office during the pleasure of the board of township trustees, and the order of election of said commissioners, and any order of their removal shall be entered upon the records of said township by the township clerk of said township; and each of said commissioners so elected, within ten days after their said election, shall file their acceptance of such appointment with said township clerk, and each of said commissioners, within

ten days after their said appointment, shall give bond with not less than two sureties, to be approved by the township trustees, payable to the state of Ohio, in a sum not less than \$200 nor more than \$1,500, as may be directed by the trustees, conditioned for the faithful performance of their duties, which bond, with an oath of office of each commissioner in same form as required of a justice of the peace indorsed thereon, together with the approval of such bond by the trustees indorsed thereon, shall be filed with the township clerk. Each of said commissioners shall receive for each day necessarily engaged in the business of their said office, the sum of one dollar, and in addition they shall receive all of their necessary expenses incurred, all of which shall be allowed to them by the township trustees and paid out of the funds of said township.

SEC. 3. The township clerk shall be clerk ex-officio of said township board of fruit commissioners, and he shall keep a correct and complete record of all their proceedings in a book to be provided him by the township trustees for that purpose, and shall file and preserve all papers pertaining to the said board of commissioners, or either of them, and pertaining to their duties, all of which shall be a part of the public records of said township, and he shall receive such reasonable compensation for such services as the township trustees may allow.

SEC. 4. It shall be the duty of said board of fruit commissioners, upon or without complaint or upon actual observation by any one of them, to proceed in a body (which shall be construed to mean any two of them) without delay and examine the trees or fruit supposed to be infected, and if any of said diseases is found to exist by said board of fruit commissioners, they shall place upon the diseased trees a distinguishing mark, and shall place upon the fruit so diseased, or which came from any tree so diseased, a placard, and indorse thereon the diseased condition of such fruit, and they shall forthwith cause notice in writing to be served upon the owner of the same, if he be a resident within the county, and if the owner be not a resident of such county, then such written notice may be served upon the person having the same in charge for the owner or agent, employe or lessee or otherwise; such notice may be served personally or by copy left at the usual place of residence of any such person, and if no such person resides within such county upon whom service can be made, then such notice may be served by mail by being deposited in a post-office, postage prepaid, and addressed to the post-office address of such person wherever he may reside. Such notice shall contain a simple statement of the facts as found to exist, with an order of said board of fruit commissioners to remove and destroy the trees so marked and designated, and the parts so infected with the black-knot, and the fruit so marked by placard, within ten days from the date of service of said notice (Sundays excepted); and if any person whose duty it is hereby made to destroy the same, fails, neglects or refuses to destroy the same as mentioned in such order of said commissioners for a period of ten days after service thereof, then the said commissioners be and they are hereby authorized and required to enter upon the premises of any person and destroy all of such fruit trees or fruit so mentioned in their said order and so found to be so diseased, which they have so marked or placarded, and said commissioners are hereby authorized to employ help and secure all the necessary means to so destroy the same, all of which shall be allowed by the township trustees and paid out of the township treasury; provided, however, that any person owning any of said fruit trees or fruit, or any person having the charge, control or supervision thereof, as agent, employe, lessee or otherwise, or any person who may have an interest, in any manner in any of said trees or fruit, or any part thereof, shall have a right to have the question whether any of said trees or fruit is so diseased or whether any of said fruit came from any trees so diseased, and the question whether any of said trees or fruit or any part of the same is a nuisance, or any of said questions, to be determined by a jury of twelve freeholders of said township; provided, that such person, within the period

of ten days from receiving such order from said commissioners, shall make his application to a justice of the peace of said township, or to a justice of the peace of an adjoining township, in case there is no justice able or competent to attend to such proceeding, and shall notify the said commissioners thereof as hereinafter mentioned; but if any such person shall fail, neglect or refuse for such period of ten days after receiving such notice and order from said commissioner[s], to make such application to any such justice of the peace and notify the said commissioners thereof of his intention to have such questions so tried by a jury, then he shall have waived any and all right to have such jury to determine such question or any of such questions, and such order of said commissioners shall be forthwith executed by said commissioners; but in case such application shall be so made for a jury, the said commissioners shall suspend temporarily their said order, which shall be executed thereafter, modified or suspended, abandoned or executed in whole or in part, by the said commissioners, as they shall be directed by the verdict of said jury.

SEC. 5. Any person receiving any such order from said commissioners intending to contest the question of said trees or fruit being so affected, the question of whether any of said fruit came from any trees so affected, or the question of whether the same or any part of the same is a nuisance, or intending in any manner to resist the said order of said commissioners, shall, within ten days from the time of receiving the said order, file his application in writing with any such justice of the peace for such jury and serve notice thereof upon said commissioners, in writing, as mentioned in section 4, and the said justice shall enter said cause upon his docket and the board of commissioners who issued such order shall be the plaintiff and a party of said action, and the person complaining shall be the defendant thereto. Upon docketing such cause and immediately upon filing of such application with such justice, the said justice shall issue a venire for a jury of sixteen freeholders of the township where said justice resides, returnable on the fifth day thereafter, which shall be served by any constable of said township, and said justice shall also at the same time issue a notice to said board of commissioners to be served by any such constable, and said notice and venire shall state the nature of said cause and mention the time and place where the same will come on for hearing. At the time and place so fixed for such hearing the board of commissioners shall appear and prosecute their said action, and in all such proceedings shall be known as a party thereto, and the said jury shall be duly impaneled, sworn and qualified and made up in the matter of challenges and qualification, and all other particulars as are provided by law, in civil cases in the courts of common pleas. The only pleading required in such cause is the order of said commissioners and the issue joined shall be the issue made by such order, and the trial shall be conducted in all respects, as far as are applicable, as trials in civil cases are conducted in common pleas courts, except that the verdict of said jury may be the affirmance of said order of said commissioners, a reversal thereof, a modification, or suspension of the same or of any part thereof, and after the verdict of such jury, the said commissioners shall execute the said order or suspend the same or execute the same as directed by said verdict, and from such verdict there shall be no appeal.

SEC. 6. The justice of the peace, constable, witnesses and jury shall receive such fees as are now provided by law for such officers before justices of the peace in civil cases, to be taxed as a part of the costs in such proceedings, and the same, together with the fees and expenses of said board of commissioners in attending such proceedings, and all other expenses and fees of said board of commissioners, shall be allowed by the trustees of said township and paid out of the township funds, and in all cases where the order of the said board of commissioners shall be sustained by said jury, and in cases where said commissioners shall execute their own order upon default of the person whose duty it shall be to execute the same,

the costs shall be paid by the party whose duty it shall be to execute such order, and in case of his failure to pay the same after demand made by the trustees of such township, the said trustees shall certify the same, together with a penalty of fifteen per cent., to the auditor of the county, to be placed upon the tax duplicate, and the same shall become a lien upon the premises of such person from the time of filing the same with the auditor, and collected by the county treasurer as other taxes.

SEC. 7. An act entitled "An act to amend section 1 of an act entitled 'An act to eradicate the disease known as 'black-knot' on plum and cherry trees,'" passed April 13, 1893 (vol. 90, p. 176), is hereby repealed, and this act shall take effect and be in force from and after its passage.

Passed April 4, 1894.

Correspondence is solicited concerning the Russian thistle and other weeds ; also concerning fungous diseases of plants.

Address

OHIO EXPERIMENT STATION,
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